

THE SENSITIVITY OF MICROORGANISMS IN THE COMPOSITION OF BACTERIAL BIOFILMS TO ARGENTO-CEPT AND CHLORGEXIDINE ANTISEPTICS

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Inflammatory diseases of the pharynx – tonsillopharyngitis occupy one of the leading places in the structure of the pathology of the upper respiratory tract in the prevalence among the population and the number of requests not only to the otorhinolaryngologist, but also to the general practitioner. [1, 2]. According to the World Health Organization, more than 100 somatic diseases of the immunopathological profile with the leading infectious toxic-allergic mechanism are associated with chronic tonsillitis [2, 3]. In palatine tonsils with chronic tonsillitis and adenotonsillitis a polymicrobial composition is detected, in which pathogenic, conditionally pathogenic and commensal microorganisms are found. [1]. These microorganisms forming biofilms on the surface of the tonsils and adenoid tissue make it difficult to eradicate bacteria and complicate chronic infectious processes. As many studies have shown, systemic antibiotic therapy for such diseases is ineffective. The best result is given by local therapy with the use of antiseptics. Recently, there has been an increase in the resistance of microorganisms not only to antibiotics, but also to antiseptics. Of great importance in its formation, plays the fact that bacterial biofilms tightly attached to the surface of cells and each other, easily exchange genetic material. This exchange takes place not only among microorganisms of its kind, but also between other species. [3, 4]. In addition, the penetration of antiseptics to all microorganisms in the biofilm is difficult. All this aggravates the treatment and the course of the infectious process. In this regard, it is necessary to conduct research on the effect of antiseptics on clinical strains of microorganisms in the composition of biofilms.

Purpose. Determine the sensitivity of microorganisms in the composition of biofilms to antiseptics Argento-sept and Chlorhexidine.

Materials and research methods. In this work, antiseptics most frequently used in the clinic for the local treatment of inflammation of the nasopharynx and oral cavity were studied: Argento-septa and Chlorhexidine. Argento-sept (spray) has anti-inflammatory, antibacterial, protective, moisturizing, softening, nourishing characteristics. Pharmacological properties: Silver nanocolloid prevents the development of microorganisms have been deactivate enzymes that are used in aerobic metabolism. Irish algae extract on the basis of specially purified and enriched water has antiviral activity, helps to moisturize and soften the throat mucosa. Chlorhexidine - (chlorhexidine digluconate) is an antiseptic with a pronounced bactericidal action against gram-positive and gram-negative bacteria.

The object of the study was bacterial biofilms consisting of monocultures.

S.aureus, *M.lisodeucticus* u *C.albicans* taken from the museum department.

For the cultivation of biofilms used sterile 96-well polystyrene U-shaped plates with a volume of 323 µl. The study used the concentration of antiseptics offered by the manufacturer and their cultivation 1, S, j, $\frac{1}{8}$. For this purpose, various dilutions of antiseptics were added to the biofilm wells and after 0.5-1-3-5 minutes the antiseptic was removed. The well was rinsed with a sterile buffer solution and fresh nutrient was added. A 1% solution of resazurin was added to register the redox potential in the wells. Within 6 hours of incubation in a thermostat every 1 hour, a change in the color of resazurin was recorded.

Results. After 1 hour after registration of the result, it was found that in all the Argento Septa studied wells, the color changed from blue to pink, which indicates that this antiseptic did not have a bacteriostatic effect on the studied microorganisms in the biofilm composition. The results with Chlorhexidine showed that the antiseptic continues to exert a bacteriostatic effect on biofilms consisting of *S.aureus*, at a concentration of S with an exposure of 0.5 and 1 minutes, and at a concentration of j – 0.125 with an exposure of 3 and 5 minutes. On *M. lisodeucticus* at a concentration of $\frac{1}{8}$ – 0.0626 mg/ml with exposure exposure from 0.5 to 5 minutes. On *C. albicans* at a concentration of 0.25 mg/ml with exposure exposure of 0.5 and 1 minutes, and at a concentration of 0.5 mg/ml with exposure exposure of 0.5 minutes, and 0.25 mg/ml with exposure exposure 3 and 5 minutes. After 2 hours of incubation, the bacteriostatic effect on the biofilms of Chlorhexidine was maintained. After 4 hours of incubation, the bacteriostatic effect on the biofilms of *S. aureus*, *M. lisodeucticus* was maintained at an antiseptic concentration of 0.25 mg/ml, and on biofilms with *C. albicans* at an antiseptic concentration of 0.5 mg/ml.

As the results of the study showed, the antiseptic Argento-septa in the concentration proposed by the manufacturer does not have a bacteriostatic effect on biofilms consisting of monocultures of *S. aureus*, *M. lisodeucticus* and *C. albicans*. Chlorhexidine antiseptic retains its bacteriostatic effect on biofilms consisting of monocultures of *S. aureus*, *M.* for 30 seconds.

Conclusion. Chlorhexidine turned out to be the most effective antiseptic acting bacteriostatic on biofilms consisting of monocultures of *S. aureus*, *M. lisodeucticus* and *C. albicans*.

Literature.

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